FY 2003 Overlay Performance Evaluation Report
of
Southeastern Universities Research Association, Inc.
Contract No. DE-AC05-84ER40150

Thomas Jefferson National Accelerator Facility Site Office
U.S. Department of Energy

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Background

Effective November 1, 1999, the Department of Energy (DOE) extended its contract with the Southeastern Universities Research Association, Inc. (SURA) for the management and operation of the Thomas Jefferson National Accelerator Facility (otherwise known as Jefferson Lab) through September 30, 2004. The contract extension continued the Department's and SURA's implementation of a Performance-Based Management Contract (PBMC). This approach focuses primarily on outcomes and results as demonstrated by performance measures rather than compliance with processes and procedures.

Secretary Abraham in the memorandum, "Performance-Based Management," dated May 12, 2003, reiterated and emphasized his full commitment and encouraged Department officials to be fully and actively involved in the implementation of a results-driven, performance-based approach to management. Performance-based management includes the following guiding principles: (1) performance objectives are established in partnership with affected organizations and are directly aligned to the DOE strategic goals; (2) resource decisions and budget decisions are tied to results; (3) primary reliance is placed upon self-assessments, with "for cause" reviews conducted only as needed; and (4) results are used for management information, establishing accountability and driving long-term improvements.

Under Secretary Card in the memorandum, "Principles for Office of Science Laboratory Contracts", dated April 30, 2003, stated his expectation that Office of Science (SC) contracts be based on six principles: (1) line management accountability (through a single Federal official) for laboratory performance with a strong focus on mission success and with authority to integrate administrative and operations requirements into program missions; (2) primary reliance on Federal, State and local laws, regulations, and national standards to establish contractor requirements and performance criteria, while minimizing the use of DOE Orders and directives as a mechanism for placing administrative and operational requirements on the contractor; (3) laboratory contractors use of external, nationally recognized experts to carry out independent risk and vulnerability studies, validate and certify that the contractor management systems meet the applicable laws or regulations, and to verify best-in-class contactor practices; (4) laboratory contractors adoption of contract-based, best-in-class management principles and an integrated management system, achievement of formal external certification of their management systems, and use of DOE directives in cases where there is a unique departmental function without an industrial process counterpart; (5) contractor development of a compelling vision for the 5-year duration of the contract and a work plan to accomplish it; and (6) in addition to financially-based incentives and related performance objectives and metrics, the Department will consider novel, non-financial incentives to promote improved contractor performance and accountability.

The SURA contract for management of the Jefferson Lab and DOE's contract management are aligned with the principles outlined above. Specifically, Clause H.32 of the PBMC requires: (1) DOE to utilize a performance based management system for Laboratory oversight; (2) the contractor to conduct an on-going self-assessment in accordance with the performance metrics in Appendix B (See Attachment 1 for a copy of SURA's Fiscal Year (FY) Self-Assessment); and (3) DOE to perform a written assessment of the contractor's performance based on the DOE appraisal program and DOE's evaluation of the contractor's self-assessment.

Included in Appendix B of the PBMC are the negotiated Performance Metrics that were used to evaluate SURA's performance in FY 2003. The negotiated FY 2003 Jefferson Lab Performance Metrics are built around a set of "key indicators," which track the six critical categories or areas of performance (Science and Technology [S&T]; Corporate Citizenship; Environment, Health and Safety [EH&S]; Business and Administrative Practices; Institutional Management; and Project Management). The Appendix B evaluation plan also includes a set of "secondary indicators," which monitor the Laboratory's performance in a more detailed way and extend the validity of each of the key indicators.

As a means of incorporating the results of the contractor's self-assessment along with other inputs in the overall evaluation of SURA's performance, DOE and SURA agreed that the Contracting Officer would develop an overlay performance report, which would supplement SURA's self-assessment. This report is intended to capture the highlights of the DOE Site Office observations/reviews, results of DOE appraisals, as well as other important information (including mitigating factors or events that may be outside the control of the contractor) that would balance the overall performance assessment for the year. The report would also include a discussion of performance against regulatory and contract requirements that were not defined in terms of performance measures. DOE and SURA also agreed in the contract that the results from these assessment inputs could change the category rating and/or overall performance rating (up or down) by as much as one performance level.

FY 1996 was the first Contractor Self-Assessment and Contracting Officer's Overlay Performance Evaluation Report following successful implementation of the PBMC. Subsequent evaluation reports were prepared for FY 1997 through FY 2002. In the FY 2002 report, the performance metrics yielded an adjectival rating of "Outstanding" in all eight categories for an overall weighted Laboratory rating of "Outstanding." Furthermore, there were no areas of disagreement with the conclusions in the FY 2002 self-assessment; however, additional information was provided in the FY 2002 Contracting Officer's Overlay Report for clarification or emphasis. Following is the DOE evaluation summary for FY 2003 for each of the six performance categories.

Executive Summary

FY 2003 provided the seventh full year of experience (plus a portion of FY 1996) for the DOE and SURA with the Performance-Based Management Contract for the operation and management of the Thomas Jefferson National Accelerator Facility (otherwise known as Jefferson Lab) in Newport News, Virginia. The experience continues to validate the value of this contracting arrangement, which focuses on outcomes and results supplemented by selective reviews of processes to assure controls are consistent with risk. This year, as in previous years, it has been necessary to "fine tune" the goals and make minor changes in the metrics to reflect changes in Jefferson Lab or Departmental priorities, but the performance based management concept works very well.

The performance measures defined in Appendix B of the contract yielded an adjectival rating of "Outstanding" in all 6 categories and an overall weighted Laboratory rating of "Outstanding." The breakdown by category and performance measures (counting peer review results as performance measures) shows the following profile:

Category	**Rating**	**Performance Rating**	**Number**
Science & Technology	Outstanding	Outstanding	49
Experimental & Accelerator		Excellent	5
Operations	Outstanding	Good	2
Scientific & Tech Manpower	Outstanding	Poor	0
Corporate Citizenship	Outstanding		
EH&S	Outstanding		
Business & Adm. Practices	Outstanding		
Institutional Management	Outstanding		
Project Management	Outstanding		
OVERALL RATING	Outstanding	**TOTAL METRICS**	56

In defining Peak Performance Goals (PPGs) and rating criteria, the Department and the Laboratory agreed at the beginning of the contract period that the comparison base should be broad enough to provide an opportunity to learn from comparison with other organizations in both Government and private industry. It was also agreed that PPGs and rating criteria in each category should support optimization of the Laboratory's overall mission and should consider the funding and maturity level of the respective functional area within the Laboratory, rather than simply "raise the bar" or automatically increase the goal each year. This approach is not intended to produce an evaluation that would be used as a direct comparison with other laboratories. However, it provides the opportunity to identify areas where the mission of the Laboratory and/or the Department might be enhanced by improving performance.

Some of the significant achievements during FY 2003 were:

- Reaching or exceeding FY 2003 "Reliable Experimental and Accelerator Operations" goals while maintaining increasingly demanding beam parameters and installation/commissioning

of a new (seven-cell cavity) cryomodule.

- Carrying out a world-class nuclear physics program that in FY 2003 produced such noteworthy results as:
  - Evidence for the pentaquark - one of FY 2003's most exciting stories in nuclear physics
  - Published measurements of the neutron form factor and the neutron A^n_1 asymmetry at moderate x, which are changing the traditional view of the quark structure and the role of angular momentum in the neutron.

- Successful commissioning of G^0 along with the future PRIMEX experiment and the hypernuclear studies, which demonstrates a strong future for the 6 GeV program.

- Demonstration of energy recovery using the Continuous Electron Beam Accelerator Facility (CEBAF), which could have significant long-range implications regarding electron colliders in the Laboratory's future.

- Successful conclusion of the recruiting effort for a new Chief Scientist /Theory Group Leader, which completes the management transition caused by the nearly simultaneous loss of the first full time Laboratory Director and the Chief Scientist (the new Chief Scientist and Theory Group Leader will actually be on board in CY 2004).

- Critical support to the Spallation Neutron Source (SNS) Project in cryogenics and superconducting radiofrequency (SRF).

- Receipt of a strong commitment letter from the Department of the Navy related to the Free Electron Laser (FEL) project stating that the Navy's aggressive goal would not be achievable without the scientific expertise and facilities of Jefferson Lab.

- Excellent progress (through Critical Decision 2, Approve Acquisition Performance Baseline) on the CEBAF Center Phase I Addition.

- Inclusion of the 12 GeV CEBAF Upgrade proposal in the Office of Science's "Facilities for the Future of Science, A Twenty-Year Outlook."

- Very successful inspections/visits by the Occupational Safety and Health Administration (OSHA) and the U.S. Nuclear Regulatory Commission (NRC) to review health and safety practices and to prepare a baseline cost estimate for possible transition to external regulation for the 10 SC laboratories.

- "Outstanding" peer review assessments for the Science and Technology, Business and Administrative Practices, and Emergency Management performance categories, and a very successful SC On-Site Review.

- Receipt of the "Corporate Cup" from the Virginia Minority Supplier Development Council for outstanding outreach activities for minority businesses, reflecting the Laboratory's strong commitment to the Department's small business program.

- Rapid response at a reasonable cost to additional DOE security requirements due to temporary changes in DOE security levels.

- Successful completion of the original scope of the energy savings projects which were financed by a $4,700,000 loan through a Bonneville Power/General Services Administration financing agreement, with a modest amount of remaining funds that might be available for additional scope items.

- Hosting a very successful and popular "Open House" attended by more than 5,000 members of the community.

- Extraordinary preparation for and response to Hurricane Isabel, which resulted in minimal property loss. A letter from Drs. Orbach, Johnson and Kovar recognized this outstanding effort.

- Continued recognition of the Laboratory's Science and Math Education program by the October 2002 Institutional Peer Review Committee and by Dr. Orbach at the November 2003 SC On-Site Review.

Some of the challenges facing the Laboratory in FY 2004 are to:

- Continue emphasis on implementation of Integrated Safety Management (ISM) principles across the site. Identify initiatives for improving the Laboratory's safety performance and develop a path forward. Use every safety incident or "near miss" as an opportunity and learning experience by considering what could have happened and what could be done better with the objective of "zero incidents."

- Continue to investigate options for improved accelerator availability and to work with DOE to implement the Laboratory's Accelerator Facility Long Range Development Plan.

- Meet the unprecedented beam requirements for the G^0 experiment while simultaneously providing the required energy spread for the hypernuclear experiment and maintaining experimental quality beam for Hall B.

- Continue preparations for the 12 GeV CEBAF Upgrade, including development work on the "next generation" cyromodule prototype and development of the conceptual design report as soon as Critical Decision 0, Approve Mission Need, is achieved.

- Integrate the Chief Scientist/Theory Group Leader into the Laboratory's science mission.

- Satisfy all obligations to the SNS Project, with special attention to the cyromodule production schedule.

- Complete the 10 kW Infrared Upgrade for the U. S. Department of the Navy and the 1 kW Ultraviolet Upgrade for U. S. Department of the Air Force.

- Continue to work with all FEL interested parties (Department of the Navy, Department of the Air Force, Office of Science, DOE Site Office, commercial users) to assure that commitments are met and that expectations are mutual. Although the funding situation has stabilized significantly since last year, the funding composition is still fragile. It is imperative that the Laboratory watch expenditures closely and keep in close contact with the sponsors so that the primary nuclear physics mission of the site will not be compromised by funding or resource problems in the FEL program.

- Work with the user community to develop the science case for the FEL and define how it integrates with the Laboratory's nuclear physics mission.

- Fill the Director of Human Resources position.

- Develop and implement a corrective action plan for the recent Purchase Card/Property Review, in coordination with the DOE Site Office.

- Continue the recovery activities resulting from Hurricane Isabel (they are nearly complete as of the date of this report) and optimize the remainder of the year's experimental program within the funding constraints, with continued attention to the backlog of approved experiments.

- Maintain technical, cost and schedule baselines for the CEBAF Center Addition Project, recognizing success builds confidence in the Laboratory's ability to manage the CEBAF Upgrade Project.

- Continue to implement the Material Control and Accountability (MC&A) Program and ensure that "other nuclear materials" on site are maintained in accordance with DOE requirements.

- Develop a formal proposal for a DOE "SRF Center of Excellence" at Jefferson Lab in response to a request made by Dr. Orbach during the November 2003 On-site Review, keeping Drs. Orbach and Kovar engaged while the proposal is being developed.

- Continue to play an active role within the national laboratory complex to support the priority Department projects, such as the SNS and Rare Isotope Accelerator (RIA), while balancing the overall Laboratory mission and workload/resources.

- Continue to keep abreast of and implement the applicable Department security initiatives that relate to Jefferson Lab, including but not limited to non-classified computer (cyber) security, foreign travel, and export controls. This item is a repeat from last year's overlay report, recognizing the continued emphasis in these areas across all levels of Government.

- Continue to support the National Environmental Policy Act (NEPA) process, with particular attention to the 12 GeV Upgrade and the FEL Upgrade projects.

- Complete the Emergency Backup Power Options Study to minimize impact on accelerator operations due to a power outage event, with an interim report in January 2004.

- Continue emphasis in recent years of broadly publicizing the opportunities for students at Jefferson Lab.

- Collaboratively work with the Site Office to develop a partnership for communication, coordination and "transparency", particularly for jointly working items in the formulative stage.

The Laboratory has done an effective job of preparing its FY 2003 Self-Assessment under the performance-based management contract. There were no major areas where the Site Office disagrees with the conclusions in the report, although additional information has been provided in this overlay report for clarification or emphasis, and occasionally a word of concern or caution has been added. Of particular importance are the comments in the conclusion of Section 1.1, "Reliable Experimental and Accelerator Operations," regarding the Department's expectations. The Laboratory and the Site Office must join together to address the Department's expectation of increase performance in all areas, and should begin those discussions sooner rather than later.

The Laboratory's Self-Assessment reflects a serious effort by the Laboratory to assess performance objectively. The Laboratory staff that prepared the various sections, consolidated the report, and coordinated with the Site Office during the process did a commendable job. The report appropriately addresses corrective actions from peer reviews and the Laboratory's internal assessments. The Overview includes a discussion of the major areas across the entire Laboratory that senior management perceives as the most important focus areas for the upcoming performance period.

In summary, the Site Office agrees with the adjectival rating for each category and the overall rating of "Outstanding" presented in the Self-Assessment. No ratings are changed as a result of Site Office observations, DOE appraisals, compliance status with laws, statutes or contractual requirements, or mitigating circumstances. The performance evaluation process worked well for FY 2003 and the process will be continued for FY 2004, incorporating minor changes mutually agreed to in Appendix B of the contract.

With regard to SURA, their FY 2004 challenge is to address and strengthen the financial controls/systems of the SURA Corporate Office and to develop a supportable method for allocating Central Office Expenses in FY 2004. In addition, SURA needs to demonstrate its leadership and commitment to excellence in both scientific research and business management practices.

1. Science and Technology (S&T) (625 Points)

1.0. S&T Review (355 Points)

The primary goals of the Jefferson Laboratory are to carry out a high quality nuclear physics experimental program and to plan and execute other related S&T programs. Related programs revolve around the application of the Laboratory's core competency in superconducting radio frequency (SRF) technology for particle acceleration. These programs include the Free Electron Laser (FEL) program; critical support role in the development and construction of the SRF cavities for the Spallation Neutron Source (SNS) Project; and, if approved, the Rare Isotope Accelerator (RIA) Project. Jefferson Laboratory is also playing an important role in the construction of a large parallel-processor computing facility for performing lattice quantum chromodynamics (QCD) computations important for nuclear physics research.

The primary facility at the site is the Continuous Electron Beam Accelerator Facility (CEBAF), which produces a high current, highly polarized beam with a 100% duty factor. Improvement of the accelerator performance has made possible the extension of the sustained beam energy to 5.7 GeV and peak energies to 6 GeV. The development of a reliable, high current, highly polarized electron source makes this facility unique in the world with regard to high current polarized beams.

Science and Technology is the most heavily weighted category of the Laboratory's performance measurement plan because it addresses the primary elements of the Laboratory's mission. The Department of Energy's role is to assure that the Laboratory's S&T program is consistent with the Department's mission and strategic plan, and that it reflects the interests and needs of the scientific community. The Department, SURA, and the Laboratory have agreed that the most appropriate method of appraising the S&T program is to annually convene a panel of recognized scientists and technical experts to review the primary program elements.

The performance ratings for this category were obtained from the results of the S&T Peer Review Committee that convened at Jefferson Lab on June 25-27, 2003. The DOE Office of Science Jefferson Lab Program Manager, Division of Nuclear Physics, chaired the committee, and with eight senior scientists from other laboratories and universities conducted an in-depth review of the Laboratory's scientific program. The committee heard presentations on activities of the scientific and technical programs, the Program Advisory Committee (PAC), and the Users' Group. The committee had discussions with the Site Office, Laboratory management and some of the academic users of the facility. The committee also took a tour of the facility. The committee evaluated the Laboratory's performance in the following subcategories:

- Laboratory Management
- Nuclear Physics Research Program (including the in-house Theory Program)
- Accelerator Operation and Performance
- Accelerator Research and Development
- Free Electron Laser
- Interaction with the User Community

The results of the review are documented in the "Report of the Science and Technology Review at the Thomas Jefferson National Accelerator Facility", dated September 25, 2003, which was prepared by the Division of Nuclear Physics, SC. This Overlay Report supplements the committee comments with comments from the Site Office based on their participation in and observation of internal activities such as the PAC meetings, technical review meetings for the experimental halls, SNS Project meetings and Semiannual Project Reviews, and FEL technical reviews and meetings.

A general overview of each of these subcategories is given below.

Laboratory Management

The S&T Peer Review Committee complimented Laboratory management for providing a focused vision for the future that balances the needs of the current scientific program, accelerator technological development and the long-term scientific direction of the Laboratory. Management has positioned the Laboratory to proceed with the 12 GeV Upgrade as soon as the Department approves Critical Decision 0. Management has successfully maintained and developed the scientific program while continuing to recruit a Chief Scientist for the past several years. Management has initiated several mechanisms to reduce the negative impact on the Laboratory from loss of overhead due to the phase out of the SNS "work for others" effort. This includes reorganizing administrative personnel and reduction in personnel.

The experimental community noted that the accelerator availability for experiments was reduced during FY 2003 due to the installation of a new cryomodule and increased beam development for the G^0 experiment. The commissioning of new cryomodules for increased reliability of current operations and for 12 GeV accelerator R&D were viewed as essential by the panel and user community, despite the impact to operations. The review committee concluded that management of the Accelerator Division could have been more proactive in anticipating problems and adjusting the schedule for beam development for experimental needs and commissioning of upgrades. The committee was optimistic that the newly established Jefferson Laboratory Research Operations Committee would improve communication and coordinate the needs of the research program with the operation of the machine. The Science Policy Advisory Group (the Laboratory's response to a recommendation from the FY 2002 review) has been formed and held two regular meetings, but it is too early to evaluate its impact. The committee repeated a recommendation from the 2002 review that Laboratory management give efficient operations its highest priority.

The Committee still had concerns regarding the lack of a Chief Scientist, and recommended that filling this position remain an extremely high priority. The Committee recognized Dr. Schiavilla for an outstanding job as interim Theory Group Leader. The committee re-emphasized the importance of having strong scientific leadership to promote the scientific program (a well-respected candidate has been offered and accepted the position of Chief Scientist and Theory Group Leader as of the date of this report, and is expected to be on board early in CY 2004).

Nuclear Physics Research Program

There is agreement on the Laboratory's statement in their FY 2003 Self Assessment that "the approved nuclear physics program represents some of the best nuclear physics that will be done anywhere in the next decade." The peer review committee remarked that the presentation of the program organized around three campaigns comprising six basic questions to be very effective in sharpening the research goals of the Laboratory. Particularly noteworthy are the results on the neutron electric form factor and the neutron A^n_1 asymmetry at moderate *x*, which are changing the traditional views of the quark structure and the role of orbital angular momentum in the neutron. Concerning the nature of QCD in the confinement regime, the experimental observations of duality indicate that higher twist effects (previously considered large in these x and Q^2 regions) may be small. The recent data from CLAS to study short-range correlations in nuclei will provide important information on the structure of nuclei. The successful commissioning of G^0 along with the future PRIMEX experiment and the hypernuclear studies indicate a strong future 6 GeV program. The pursuit of "physics beyond the Standard Model" is a relatively new field for Jefferson Lab, and the Laboratory is encouraged to include scientists experienced in this field in its Program Advisory Committee.

The Laboratory is performing an increasing number of experiments with more demanding beam quality requirements, while at the same time responding to pressure to maintain overall productivity. The review committee encouraged the Laboratory to focus on improving the experiment review process by examining the experimental equipment, beam requirements and machine readiness, and possibly data analysis strategies and procedures in order to identify special needs early in the process.

The Theory Group has a strong, diverse, and balanced program developing the Generalized Parton Distributions, lattice QCD, relativistic descriptions of few-body structure, and electromagnetic hadron single- and multi-nucleon coupling. The review committee recognized Dr. Rocco Schiavilla for an outstanding job as interim Theory Group leader although he recently stepped down to devote more time to his university commitment. The reviewers also strongly support the Theory Group's effort to establish an analysis center for the spectroscopy program in Hall B.

Accelerator Operation and Performance

As of the end of FY 2003, data taking for more than 70% of the approved experiments has been completed, with data analysis somewhat less complete. A year of three-hall operation with good accelerator availability and a hall multiplicity of 2.39 is indeed a significant achievement, although the accelerator availability in FY 2003 was about 10% lower than expected. The primary causes for this have been attributed to: (1) increasing demands of beam parameters (particularly in the G^0 experiment) and (2) changes and upgrades to the facility performance during maintenance periods. One example of these upgrades was the installation of a prototype cryomodule that will increase the maximum energy of the machine and provide valuable information for design of the 12 GeV Upgrade cryomodules. Commissioning of the module took longer than anticipated and negatively impacted machine performance. The S&T Peer Review committee felt that better management practices by the Accelerator Division might have

minimized the impact of the machine upgrades on the research program. It was noted that the accelerator optics model needs to be further developed for effective operations of the machine.

Many of the beam requirements for G^0 have been met, but there are still some outstanding issues. Better communication and planning early in the process could have increased the readiness of the machine for this challenging experiment. The establishment of the Jefferson Lab Research Operations Committee should help in integrating the beam requirements of the experimental program with overall accelerator operations.

TJNAF has acknowledged the need for long-term, proactive maintenance programs, as mentioned in previous peer reviews. A draft Accelerator Facility Long Range Development Plan was prepared and the Laboratory is finalizing the plan in coordination with DOE. Although the combination of physics and accelerator availability exceeded the "physics delivered" goal for the year, the margin was less than in previous years, the backlog of approved experiments declined only slightly, and some experiments had to move off the floor without achieving all of their research goals.

The peer review committee was optimistic about the recent re-organization of the Accelerator Division, but it will need several years of monitoring before the effectiveness of the re-organization can be assessed. The committee recommended that upper management of the Accelerator Division be more intimately involved in day-to-day accelerator operations.

Accelerator Research and Development

The Center for Advanced Studies of Accelerators (CASA) has played a significant role in upgrading the accelerator operations of the facility to meet the increasing demands of the research community in addition to its basic role of accelerator R&D. Using the CEBAF, CASA successfully demonstrated energy recovery for a large final to initial energy ratio, an important test for any future electron-ion collider. The Institute for Superconducting RF is also doing an excellent job developing new cryomodules for the 12 GeV Upgrade as well as fulfilling responsibilities to the SNS Project. This institute is recognized as one of the leaders of super-conducting RF technology in the world. A new high gradient cryomodule was recently installed and successfully operated in the CEBAF.

The S&T Review Committee recommended that CASA have a more proactive role in accelerator operations by having the responsibility to design, study and commission any changes/enhance-ments that affect the CEBAF beam dynamics.

Free Electron Laser

The FEL group largely completed construction and began commissioning of the upgraded machine that is expected to produce over 10 kW in the IR, 1 kW in the UV (0.3 - 1 μ), and over 100 W in the THz range (1-100 cm^{-1}). The FEL appears to have secured operational funds from the Office of Naval Research (at least through FY 2004), alleviating somewhat the concern from last year's review that the Nuclear Physics Program might have to absorb the cost of staffing reductions and other shutdown costs if FEL funding from other sources didn't materialize as planned. Combined with other funding sources, the near term future of the technical

development should be secure, with operating funding provided for a small but critical ongoing science program. The Jefferson Lab IR/UV FEL was also recognized in the Basic Energy Science Advisory Committee (BESAC) Subcommittee contribution to the 20-year DOE strategic plan as a source of high power, short-pulse radiation in the terahertz and far infrared region which may have potential scientific benefit. This BESAC recognition opens the possibility for future DOE Basic Energy Sciences Program funding and the Laboratory was encouraged to pursue that avenue vigorously.

At the SC On-Site Review, it was suggested that the Laboratory continue to review the FEL science to assure a path forward that is consistent with the primary nuclear physics mission of the Laboratory and motivates users to contribute toward operating expenses and maintenance of core expertise.

The U.S. Department of the Navy continues to show interest in a higher power (100 kW IR) upgrade that could be added to the 10 kW upgrade with minor down time. There are other possibilities for an energy-recovering linac, which could be the basis for the next generation X-ray machine, with specific applications as a light source for materials science. These possibilities are continuing to evolve.

Interaction with the User Community

The user community remains pleased with the Laboratory and committed to its future. They have invested major efforts in supporting the Laboratory programs and its future, such as in the preparation of the Preliminary Conceptual Design Report (PCDR) for the 12 GeV experimental program. The Laboratory continues to play a significant role in the mentoring of graduate students. To date, the Laboratory has produced 148 Ph.D.'s with another 126 in progress. The users' main concerns were the delay in approval of the 12 GeV Upgrade and the continuing lack of a Chief Scientist/Theory Group Leader. (This concern has been resolved with a recent hire who will be on site early in 2004). They continue to express concerns over the lack of office space and the length of the backlog of pending experiments. The CEBAF Center Addition is expected to alleviate some of the pressure regarding office space issues.

Conclusion

Based on the results of the June 2003 Science and Technology Peer Review, the November 2003 SC On-site Review, feedback from users and the sponsoring Program Offices, and direct observations, the Site Office agrees with the overall rating of "Outstanding" for the S&T category.

Focus for FY 2004

The Site Office commends Laboratory leadership for effective management of the scientific program, strong user satisfaction, a diverse and balanced theory program, and successful commissioning of the G^0 experiment. The Laboratory has made progress in addressing accelerator reliability with the drafting of the Accelerator Facility Long Range Development Plan, and has done a superb job of maintaining user support and planning for the 12 GeV Upgrade and delivering physics output. The reorganization of the Accelerator Division to include CASA and the SRF Institute has placed the Laboratory in a better position to respond to

the challenges ahead. Performance measures as they currently exist are appropriate for FY 2004. The Site Office agrees with the "Principal Areas of Emphasis for FY 2004" as outlined in the Laboratory's FY 2003 Performance Review.

SURA and senior Laboratory management should place a very high priority on fully assimilating the new Scientific Director and Theory Group Leader into the Laboratory's scientific mission, optimizing reliability and availability consistent with budget and other Laboratory priorities, delivering beam for the first production run of the G^0 experiment, and supporting SNS and FEL commitments.

1.1. Reliable Experimental and Accelerator Operations (200 points)

Performance measures for this area focus on delivered physics operations, accelerator downtime, experimental equipment availability, effectiveness of the scheduling process, and overall operations effectiveness. Quantitative evaluation of the five indicators for this area resulted in an overall rating of "Outstanding" for FY 2003, although with a smaller margin than in previous years. In addition to the quantitative results, the following are several areas worth mentioning in relation to the FY 2003 performance:

- The Laboratory did an excellent job of securing the site in preparation for Hurricane Isabel. Physical impact from the hurricane was minimal and the recovery effort was very well organized. However, operational impact was significant because of the cryogenic warm-up resulting from loss of electric power by the local utility. Lessons learned from the site and accelerator recovery should be used in the development of a Backup Power Options Study and the identification of additional actions which should be considered to further strengthen the site electric power supply reliability as well as other facility emergency preparation efforts.

- The Laboratory has done an outstanding job of working with the users to overcome the challenges of providing the special beam parameters required by G^0 including the 31.2 MHz versus the typical 499 MHz bunch trains.

- The experience gained from the installation and operation of cryomodule "SL21" will contribute greatly to improving the performance of the next generation of cryomodules for the 12 GeV Upgrade.

- Accelerator downtime was reported as 15 percent. Factors contributing to this level of downtime were associated with initiatives to improve and stretch CEBAF capabilities. A better balance may be needed between pursuing stretch goals and providing reliable operations; however, any rebalancing should reflect discussions with the Site Office and the Nuclear Physics Program Office.

- The Laboratory should investigate whether Hall B wire chamber problems indicate a need to broaden preventative maintenance efforts.

- Hall A septum magnet problems were illustrative of challenges that are inherent with pursuing ever-greater operational capabilities. Procurement of high quality

superconducting magnets has been particularly challenging because the demand for these components is so small that vendors do not appear to be retaining the expertise needed to provide quality products.

- The multiple instances of extended down times for data collection have created the perception among some stakeholders that the metrics are not adequately measuring performance in this area. Allowances for a challenging experimental program are understandable; however, the allowances may be exceeding what is reasonable for an optimal balance of excellent and extraordinary experiments.

The Laboratory has satisfied the requirements mutually agreed upon at the beginning of FY 2003 to achieve a rating of "Outstanding" in this area and should be commended for this effort. Nevertheless, three items should be kept in mind as the Laboratory moves forward. The Laboratory should note that the S&T Review evaluated accelerator operations and performance as part of its charge and assigned an adjectival performance rating of "Excellent" to the Laboratory because it concluded that more proactive Laboratory management could have resulted in better accelerator performance. The review also acknowledged that management is taking positive steps to improve the situation. Secondly, although the users remain quite satisfied with the quality of the science program and the beam provided at Jefferson Lab, the user representatives mentioned at both the FY 2002 and FY 2003 Science and Technology Peer Reviews and at the November 2003 Office of Science On-site Review that they have observed some deterioration in beam availability. The expectation is that this is a short-term phenomenon and not a trend. The Laboratory has acknowledged the users' concerns and has developed an Accelerator Facility Long-Range Development Plan which, when implemented, is expected to improve accelerator availability. Lastly, there is increasing attention within the Department to higher performance in all areas, from "stretch goals" in science to "top quartile" (or possibly "top decile") in safety metrics. The Laboratory, Site Office and Program Office must work together to address the Department's expectations.

Challenges in FY 2004 include addressing the emergency power supply issue, improving accelerator availability and the implementation of the Accelerator Facility Long-Range Development Plan. The Site Office endorses the Laboratory's plan to enhance the metric for delivered physics operations to account for experiments that do not obtain all the planned for data.

The Laboratory is faced with another very challenging experiment schedule for FY 2004. The concurrent running of the G^0 and hypernuclear experiments will once again stretch the limits of operational capabilities for both the accelerator and the halls. The Laboratory must strike an appropriate balance in consultation with the Nuclear Physics Program Office between scheduling excellent experiments that can be readily accommodated and extraordinary experiments that stretch accelerator performance limits.

In conclusion, the Site Office agrees with the overall rating of "Outstanding" for the Reliable Experimental and Accelerator Operations area in FY 2003.

1.2. Production of Scientific and Technical Manpower (70 Points)

Performance measures for this area focus on Jefferson Lab education and training efforts to provide the future scientific/technical work force for the nation's scientific research. Overall performance once again achieved an "Outstanding" rating for FY 2003. There was a drop off in the number of advanced degrees awarded by minority institutions this year; however, considering the unusually high number of graduates in FY 2002 and the number of students currently "in the pipeline", this appears to be a statistical anomaly rather than indication of a problem in this area.

This high quality program encourages students' continued involvement in Jefferson Lab activities thereby providing an excellent opportunity for the students' growth, a substantial contribution to the Laboratory's output and potential future benefit to the entire scientific community. Site Office discussions with students have indicated that their experiences at Jefferson Lab are very positive. This could result in significant contributions to the scientific advances of tomorrow well beyond the scope of current Laboratory work.

Efforts not directly contributing to the performance measure scores also continue to go well. Student seminars on subjects where the Laboratory has unique expertise generate significant interest and contribute towards the transfer of Laboratory knowledge. In particular, computer language courses continue to be very popular. In FY 2003 close to 30 seminars were held over the summer months with 30-40 students attending each one. Monthly lunch seminars held throughout the year conducted by undergraduate and graduate students have had similar strong attendance. This is an excellent opportunity for students to develop their presentation skills and network as well as share information and ideas. The increasing participation in this activity illustrates how much students feel this is a beneficial experience.

The Site Office agrees with the continued emphasis in FY 2004 on the expansion of intellectual, social and recreational opportunities, and the involvement of students at Jefferson Lab. Emphasis on broadly publicizing the opportunities for students at Jefferson Lab is also encouraged. Continued efforts to enhance the student experience with a variety of activities organized by the Jefferson Lab Student Affairs Office are commendable.

In summary, the Site Office agrees with the Laboratory's score of "Outstanding" in this category. Efforts to continually improve this very important program are highly endorsed.

2. Corporate Citizenship (75 Points)

This performance category measures the degree to which the Laboratory's mission-related competencies serve the public and national interest and is divided into the following two sections: (1) Public Outreach and Improved Scientific Literacy, and (2) Technology Transfer.

Public Outreach and Improved Scientific Literacy (35 Points)

The Laboratory has special assets and capabilities that can add value to the public beyond its defined scientific research mission, specifically in the areas of improved scientific literacy and education. At the same time, as a publicly funded institution, Jefferson Lab has a particular

obligation to be a "good neighbor" in the community as it conducts business and to keep the public informed on the operational aspects of the Laboratory and plans for the future. Furthermore, the Laboratory must actively solicit and take into account the views of the community in carrying out its activities. This performance category measures the extent to which the Laboratory is successful in addressing these opportunities and obligations. SURA and Jefferson Lab have long recognized the importance of reaching out to the many diverse elements of the public for the purpose of education and discussing the value of scientific research generally and on the particular significance of the research being conducted at Jefferson Lab. Again in FY 2003, the Laboratory conducted an effective public outreach program to inform and educate the public, and to solicit its support for stronger scientific research programs at all levels. This program included facility tours for the public, and industry and government officials; talks by Laboratory managers and staff to civic, community and professional organizations; exhibits and participation in public events; a very popular biennial open house; and effective use of the print media. In addition, an exciting Education web page provides a popular and valuable resource for students and teachers alike. The Jefferson Lab Education web page continues to be a valuable resource for teachers and students.

Also in the area of science education, the Laboratory continued to place special emphasis on its K-12 program and particularly on the Becoming Enthusiastic About Math and Science (BEAMS) program. These programs target "at risk" young students with activities that are designed to educate them and stimulate their interest in science and math, and the Laboratory has served more than 15,200 students this year and provided in-service activities to more than 2,300 teachers. As an overall outside metric that documents the success of the BEAMS program, the students that attended the BEAMS program during their 6th, 7th and 8th grade years improved their Virginia Standards of Learning Test Scores in the areas of science and math. The Laboratory has also designed and implemented excellent in-service programs to further develop teacher capabilities to instruct math and science in the classroom. The Laboratory continues to implement its educational "Physics Enrichment for Science Teacher" (PEST) Program for science teachers. During the summer of 2003, 24 middle school science teachers participated in a four-week physics "mini-course" taught by Laboratory physics professionals. In addition, members of the Laboratory staff continue to be engaged in various regional business and educational partnerships.

Beyond its significant involvement with the public in science education, the Laboratory has worked cooperatively with regional, state and local groups, and elected officials on economic development issues, educational improvement initiatives and community improvement opportunities. The Laboratory Director and a number of other managers and staff represent Jefferson Lab on important government and community councils and boards. They provide open channels of communication to allow the public to raise questions and resolve issues. The Laboratory is widely recognized for its excellent contributions to the work of these bodies. The Laboratory continued to be sensitive to its Department of Energy relationship and consistently gave appropriate credit and recognition to the Department and the Office of Science in press releases and in other public forums. The Laboratory Public Information Officer meets regularly with the Site Office regarding upcoming media efforts and coordinates significant events with the DOE Public Information Office. Customer feedback data from members of the public demonstrated high levels of satisfaction with their interactions with the Laboratory.

Based on performance data, results of independent reviews and Site Office assessments, an overall rating of "Outstanding" is merited for this performance category. The Laboratory is commended for its "best-in-class" educational outreach program.

Technology Transfer (40 Points)

This performance category measures the degree to which key technologies related to Jefferson Lab's primary scientific mission are disseminated to industry. Performance is measured by the amount of non-DOE investments into Jefferson Lab initiatives, intellectual property generation and the level of customer satisfaction. Based on the results of the key indicator and the secondary indicators, Jefferson Lab achieved an "Outstanding" rating for FY 2003.

Without any direct funding for technology transfer provided by DOE in FY 2003, Jefferson Lab continued to have an active and beneficial technology transfer program based on collaborative efforts with other partners. The total amount of "funds-in" to Jefferson Lab as a result of technology transfer activities is about $9,200,000 or 11% of the Laboratory's operating budget. In October 2002, the Laboratory implemented a new organization structure that created a Chief Technology Officer position to strengthen the Laboratory's technology transfer programs/ responsibilities. The Laboratory accomplished several noteworthy objectives/milestones during the fiscal year in the area of technology transfer:

- Free Electron Laser (FEL) Program. Under a broad collaboration, the Department of Energy and SURA are partnering with the Department of the Defense, the Commonwealth of Virginia and the Laser Processing Consortium to design, construct, commission, and operate an infrared Free Electron Laser. This facility will support the Department of Defense's efforts to investigate the potential utility of high-energy laser devices and provide valuable information to Jefferson Lab and the industrial partners regarding potential industry applications of intense laser light. Construction of the initial facility was successfully completed on September 30, 1997. On July 15, 1999, the Laboratory exceeded its design goal of 1,000 watts by producing 1,720 watts of infrared light.

  The Laboratory is currently in the process of upgrading the FEL facility to 10 kilowatts in the infrared range for the U.S. Department of the Navy and upgrading the FEL to 1 kilowatt in the ultraviolet range for the U.S. Department of the Air Force. As addressed in the various project reviews of the FEL during FY 2003, excellent progress has been made on these projects given the extremely tight funding constraints and the review committees were very pleased with the quality of the work being done. On October 31, 2003, the U.S. Department of the Navy provided a strong program commitment letter stating: "The Office of Naval Research is committed to long term Science and Technology program to demonstrate technologies and architecture capable of scaling to two orders of magnitude increase in average FEL output power at IR wavelengths. As you know, this is an extraordinarily aggressive goal and will not be achievable without the scientific expertise and FEL facilities of Jefferson Lab." The Laboratory also began construction of a terahertz (THz) beamline to the FEL facility for the U.S. Department of the Army. This project will be operational in late 2004 and the U.S. Army is investigating the application of a high power THz imaging for land mine detection. Excellent progress is being made on this project as well.

The Laboratory continues to play a key role in successfully managing this program by: (1) continuing to upgrade the FEL facility for the U.S. Department of the Navy and the U.S. Department of the Air Force; (2) adding a terahertz (THz) beam line to the FEL facility for the U.S. Department of the Army; (3) continuing to work with federal, state and local governments for support; (4) maintaining excellent working relationships with the U.S. Department of the Navy, U.S. Department of the Air Force, U.S. Department of the Army, and SC; (5) utilizing the Jefferson Lab Industrial Advisory Board, the Laser Processing Consortium and the Maritime Technical Advisory Committee (MTAC) to conduct technical and business planning for the FEL project; (6) developing and implementing a "user program" for the FEL facility; (7) working on many fronts to obtain funding for operating the FEL and HELIOS synchrotron; and (8) working with the Site Office and Nuclear Physics Program Office to prepare for future Department of Defense plans for the development of high energy lasers in support of national defense and homeland security initiatives/requirements.

- Advanced Technology and Economic Development. The Laboratory continues to be an active member in various community organizations concerned with advanced technology and economic development, such as the Hampton Roads Partnership (Executive/Technology Committees), Greater Peninsula NOW, Peninsula Alliance for Economic Development (Board of Directors), City of Newport News Applied Research Center University Consortium, Jefferson Center for Research and Technology Committee, Virginia Microelectronic Consortium, Jefferson Center for Research and Technology Marketing Committee, Hampton Roads Partnership Technology Committee, Peninsula Alliance for Economic Development (Board of Directors), Hampton Roads Technology Council (Board of Directors), Cooperating Hampton Roads Organizations for Minorities in Engineering, Newport News Chamber of Commerce Business and Education Council, the Peninsula Chamber of Commerce, the Virginia Research and Technology Advisory Commission, and the Newport News Economic Development Authority.

  Another major achievement that has continued in this fiscal year is the Laboratory's partnership with state and local governments, and academia. Jefferson Lab has successfully partnered with the City of Newport News, the Commonwealth of Virginia and various universities to launch an applied research park around Jefferson Lab and to build the Applied Research Center (ARC) building adjacent to the Laboratory site. On May 4, 1998, the ARC building was dedicated by the City of Newport News and tenants from Christopher Newport University, the College of William and Mary, Old Dominion University, Norfolk State University, and Jefferson Lab moved into the building. The ARC building houses researchers interested in exploring technologies related to Jefferson Lab's research. In addition, the ARC universities, in collaboration with the Laboratory, successfully completed the fifth year of operation of the Center for Photon and Plasma Processing using a grant from the state's Center for Innovative Technology. In addition, the ARC universities led by ODU competed and won a grant from the National Science Foundation (NSF) to establish a Center for Lasers and Advanced Manufacturing in the ARC building. Due to the overwhelming success of the ARC arrangement, the City of Newport News is considering building a smaller second ARC building in the Jefferson Research Park.

As it relates to the Department's lease for office and Laboratory space in the ARC building, the Laboratory and the Site Office successfully negotiated a "one-of-a-kind" agreement with the city Economic Development Authority (EDA) to provide EH&S advisory services and operation and maintenance services to the EDA on a cost reimbursement basis. Under this agreement, the Laboratory advises the EDA and the EDA applies Jefferson Lab EH&S standards in the ARC building, which provides a "seamless" site EH&S working environment. This arrangement gives the Laboratory effective oversight of activities in the ARC building without the cost or liability of being the building owner or manager. This agreement allows the DOE and the Laboratory to continue its partnership with the City, the Commonwealth of Virginia and local universities, which has been a contributing factor to the success of the Laboratory. This was the sixth year for the Laboratory to provide these services for the EDA and the Laboratory has successfully performed these "unique" services while maintaining effective oversight of activities in the ARC building. The city, the Commonwealth of Virginia, local ARC universities, and the Laboratory are to be commended for their partnerships and for making the ARC a success.

- Intellectual Property Generation. In FY 2003, the Laboratory exceeded its intellectual property performance goal, successfully executed twenty patent applications and was awarded five patents that relate directly to Jefferson Lab's core competencies. An excellent example of transferring Laboratory technology to the private sector for commercialization is the Dilon Technologies medical imaging equipment. The Laboratory awarded a license to Dilon Technologies to commercialize the medical imaging equipment that was jointly developed by the Laboratory and Dilon Technologies. Under this arrangement, the Laboratory transferred the gamma camera technology "know-how" and relevant technical information to Dilon Technologies for conversion into a commercial product that will be used as a medical device for use in scintimammography procedures for breast cancer detection. Furthermore, the Laboratory is working with the Oak Ridge National Laboratory (ORNL) and Johns Hopkins University to develop instrumentation that will allow bio-medical researchers to study small animals with nuclear medicine imaging techniques while they are awake and unrestrained. The Laboratory has also initiated a partnership with the University of Florida and the University of South Florida to develop a next generation medical imaging device. In addition, the Laboratory continues to participate in DOE's Small Business Innovative Research (SBIR) Program with three active partnerships, and there were three active Cooperative Research and Development Agreements (CRADAs) in FY 2003.

Based on performance data, results of independent reviews, and Site Office assessments, an overall rating of "Outstanding" is merited for this performance category.

3. Environment, Health and Safety (100 Points)

The performance measures for this category are intended to provide an overall assessment of the status of the Laboratory's Environment, Health and Safety Program. In FY 2003, there are two "key indicators" that broadly measure the Laboratory's performance and eight "secondary indicators" that provide more detailed validity of the "key indicators." Using these performance

measures to assess the Laboratory's achievements in Quality Performance in Environment, Health and Safety resulted in an overall weighted rating of "Outstanding" in the Laboratory's Self-Assessment.

The Occupational Injury Cost Index (one of the two "key indicators") compared favorably to that of the other DOE research laboratories in FY 2003. This was a major improvement over the FY 2002 value. This performance measure yielded a rating of "Outstanding." The second "key indicator," environmental exceedences, also yielded a rating of "Outstanding." There were no environmental exceedences during the fiscal year. The "key indicators" for FY 2004 have been changed to reflect the Office of Science challenge to its laboratories to measure themselves not against other DOE entities, but against best-in-class peer organizations using two metrics: Total Recordable Case (TRC) Rate and Days Away, Restricted or Transferred (DART) Rate. These two indicators will be worth 50 points each and the environmental exceedences will remain as the third "key indicator." The Laboratory will work to achieve a performance level which meets or exceeds the TRC Rate target of 1.1 in FY 2005 and the DART Rate target of 0.5 in FY 2005 (which corresponds to the "top quartile" of peer government and commercial organizations).

The Emergency Management Peer Review took place on August 6-7, 2003, which resulted in an overall performance rating of "Outstanding." The Peer Review Team consisted of the City of Newport News Emergency Coordinator, the Safety and Security Manager for a local hospital, and the Jefferson Lab Cryogenics Group Leader. The Team was chaired by the Lawrence Berkeley National Laboratory Security and Emergency Services Manager. The Team was most impressed with the overall breadth and depth of the emergency management program as well as the knowledge and commitment to the program demonstrated by the Laboratory staff. The Peer Review Team made special mention of the Laboratory's continued excellent partnership with the local emergency response and planning community. There were no program weaknesses found by the Peer Review Team; however, they did provide a few suggestions for further refinement and improvements to the program. During FY 2004, the recommendations should be given appropriate consideration for implementation as well as taking steps to ensure close Laboratory-Site Office coordination on emergency management preparedness.

Hurricane Isabel seriously impacted the Commonwealth of Virginia; however, the Laboratory suffered minimal property damage. This was due to the hurricane preparation and recovery measures described in the emergency management program and the dedicated staff that worked to ensure the Laboratory was "buttoned down" for the storm. Although the Laboratory survived Isabel with minimal physical damage and no injuries, not everything worked as planned or as well as it could have. In particular, the extended and widespread electrical power outage resulted in helium loss, accelerator warm-up and the loss of about one month of research time. There were several "opportunities for improvement" that were identified during and after the storm. These "opportunities" are to be given appropriate consideration for implementation during the year. One of those "opportunities" is to revisit the use of emergency backup power generation to prevent the loss of helium. The Laboratory is currently exploring options and expects to have a report on the options and a cost/benefit analysis completed in early CY 2004. Additionally, the Laboratory and Site Office during FY 2004 will jointly review lessons-learned to identify enhancements to emergency management and readiness planning and communications, as well as measures to enhance facility protection.

As directed by Congress, the U.S. Nuclear Regulatory Commission (NRC) and Occupational Safety and Health Administration (OSHA) conducted external reviews of the Laboratory in July and August 2003, respectively, as a prelude to possible transition to external regulation for the ten Office of Science laboratories. No significant program deficiencies were noted during the reviews. The reviews went well principally because of the coordination between the Laboratory, Site Office and the external reviewers. The Laboratory is commended for closing out fifty percent of the OSHA findings to date with a schedule for addressing all of the findings by the end of FY 2004. In the Medical Services area, a medical records and medical program audit was performed by the OSHA Occupational Medicine Office with very favorable results.

As part of the Environmental Assessment for Improvements to the Laboratory completed in July 2002, the Facilities Management Group completed a site-wide storm drainage master plan for storm water management associated with future development of the Laboratory. Design of a retention pond and other storm water management improvements also began during the year and was coordinated with the City of Newport News and the Site Office. In addition, another National Environmental Policy Act (NEPA) Team was formed to develop an Environmental Assessment (EA) for the Proposed Upgrade and Operation of the CEBAF and FEL Accelerators and Construction and Use of Associated Buildings. The Team has met several times to perform internal scoping of the proposed action.

The Laboratory's Medical Services area responded to an international outbreak of Severe Acute Respiratory Syndrome (SARS) by assisting management to develop procedures related to employee travel to and from affected areas. Medical Services also provided two seminars (one by the Medical Director and one by a nurse) concerning the disease and Laboratory policies, and provided travel medicine consultations for all employees planning travel to affected areas.

Although the Laboratory has had few reportable occurrences and injury/accident reports, during the FY 2002 Institutional Review Dr. Orbach requested the Laboratory to provide him accidents/injuries information on a monthly basis beginning in September 2002. The monthly status report continued through December 2002 when Dr. Orbach discontinued the report because the Laboratory's accident/injury rates were declining. However, during the last half of FY 2003, the number and type of "near misses" have increased slightly giving the Site Office some concern. The Department is pleased that the Laboratory Director is personally involved in these events, and arranging discussion groups and additional training in areas where events have occurred (i.e., electrical safety, proper lifting techniques). The Site Office recommends the continued personal attention and visibility of the Laboratory Director as well as Associate Laboratory Director and middle management level personnel in this critical area.

The Site Office agrees with the emphasis that the Laboratory has placed on the new requirement for a formal Environmental Management System and the milestones identified on the two safety focus areas of electrical safety and material handling. In summary, the rating of "Outstanding" accurately reflects Laboratory performance to the goals established for FY 2003.

The Site Office and the Laboratory have agreed on EH&S goals for FY 2004 in response to Dr. Orbach's expectation of all SC laboratories' performance being in the top quartile of its peer group by FY 2005. The Site Office and the Laboratory will continue to discuss a stretch goal of being in the top 10 percent and path forward.

4. Quality of Business and Administrative Practices (100 Points)

This performance category measures the degree to which the Laboratory is maintaining effective and efficient business and administrative practices. Performance is measured by a peer review of the Laboratory's administrative and business systems (which is the key indicator and is valued at 70% of the overall points) and several secondary indicators that provide more detailed validation of the key indicator. The secondary indicators are grouped in the following functional areas: facilities management, property management and protection, financial management, procurement, human resources and services, and cyber security. Based on the results of the Administrative Peer Review (the key indicator) and the secondary indicators, Jefferson Lab achieved an "Outstanding" rating in FY 2003.

Peer Review

The FY 2003 SURA sponsored Administrative Peer Review was conducted at Jefferson Lab on March 3-5, 2003, by a panel that included representatives from other SC laboratories, DOE/SC, academia, the user community, and private industry. The FY 2003 Administrative Peer Review scoring point distribution method was changed significantly to better match the Laboratory's new organization. The Administration Division was scored as a whole and the new offices of Chief Financial Officer (CFO) and Chief Information Officer (CIO) were added. Ms. Leah Dever (Director, SC Office of Laboratory Operations and ES&H) was the DOE representative. The Site Office participated in and observed the entire review. The purpose of the panel was to review each major element of the Laboratory's business, administrative and support systems to determine if it is pursuing high quality standards while being cost effective. In addition, the panel was to identify areas that warrant special attention for targeted improvement and/or special recognition. In arriving at an overall rating, the panel: (1) listened to extensive presentations by and interacted with the Administrative Department Heads; (2) interviewed key members of the Laboratory and the DOE Site Office; and (3) reviewed supporting documentation including audit reports, appraisals and performance metrics.

Overall, the Panel rated the Laboratory's Administrative structure as an "Outstanding" and noted: "The Administration Division is carrying out their responsibilities in a cost effective, efficient, and timely manner. The performance measures utilized are appropriate to the effort of continued improvement in the services provided to the Laboratory. There is a clear understanding of the customer-supplier relationship that helps maintain the focus."

In summary, the panel validated the Laboratory's Quality Assurance Plan (the Administration Division's self-assessment), assured SURA and DOE management that there are adequate controls in place to protect the Laboratory and noted several recommendations/areas for improvement relating to the division office, procurement, finance, human resources and services, and plant engineering.

In addition, the Panel noted several noteworthy achievements in the Administration Division:

- The practice of Human Resources and Services staff meeting their Laboratory customers at their locations continues to be a noteworthy practice as many customers commented on their appreciation of this service.

- The completion of the site-wide Condition Assessment Survey along with the strategic facilities plan provide the tools for the Laboratory to identify maintenance needs and make risk-informed decisions when there is a need to defer maintenance.

- The resume tracking system "RecruitMax" is now operational and providing useful and timely information in an effective manner.

The Site Office agrees with the overall rating of "Outstanding" and the recommendations resulting from the Administrative Peer Review as an accurate evaluation of the Laboratory's FY 2003 performance in the area of business management. The peer review approach involved experts with diverse backgrounds and broad perspective of views and "best management practices." This approach produced a valuable assessment of Jefferson Lab's performance in the business management area and will be continued in future years as a means of evaluating the Laboratory's performance. All of the recommendations from the FY 2002 Administrative Peer Review have been closed or a satisfactory rationale for deferring action was provided, and the FY 2003 Review uncovered no significant problems. However, the Panel did recommend that the Laboratory "should pay special attention to long-term infrastructure maintenance needs and solidify a long-term strategy for dealing with issues before they become the major problem that many other DOE laboratories are facing."

In addition to the Administrative Peer Review and the performance metrics, the Site Office monitors the Laboratory's performance on a day-to-day basis and utilizes matrix support from SC Headquarters (HQ) and ORO. During this year, the Site Office received the following technical assist visits/reviews:

Office	Date
SC-HQ Security Review	July 30, 2003
SC-HQ Property and P-Card Review	September 8-11, 2003

Based on the information provided in the technical assist visits/reviews as well as the information provided in the Administrative Peer Review Report, the performance-based metrics and DOE's ongoing operational awareness, the Site Office has determined that the Laboratory's business functions are being properly managed and that there are adequate business management systems in place to protect the Government's interests.

As it relates to the adequacy of the FY 2004 performance measures, the performance metrics will remain the same with the exception of the Facilities Management performance metrics. In this section, the Facilities Management project management performance metrics will be moved to the Project Management section (6.0) and the preventative maintenance performance metric will be revised to use the Asset Condition Index. In addition, the Site Office and Jefferson Lab are in the process of reviewing the frequency and agenda of the SURA sponsored Administrative Peer Review in accordance with the requirements of Appendix B of the Jefferson Lab contract.

Secondary Indicators

Specific performance highlights and areas for improvement by each functional category are discussed below:

- Facilities Management. In FY 2003, the performance measures for this category focused on maintenance and upgrades of the site facilities and infrastructure. The challenges in this area are formidable requiring both good planning and flexibility to meet the needs of a growing facility under tight budget constraints. Because of aging facilities across the DOE complex combined with severe funding constraints for capital projects, facilities management is one of the most important concerns within the Department. There were five measures ("secondary indicators") used to assess performance in this area. Based on these performance measures, the Laboratory's achievements in facility management resulted in an overall weighted rating of "Outstanding" for FY 2003.

  The Site Office agrees with the Facilities Management accomplishments identified in the self-assessment document. In particular, the Facilities Management staff should be recognized for their outstanding effort towards completing third-party financed Energy Conservation Projects. Completion of these projects contributes significantly to the needed replacement of obsolete and failing equipment in addition to fulfilling required energy conservation goals. Performance of rigorous facility condition assessments is also highly commendable. The initiative shown in the area of infrastructure maintenance in spite of tight budget constraints is evidence of commitment to the long-term health of Jefferson Lab. The Lab's response to significant demands for Facility Information Management System (FIMS) data entry and verification also deserves recognition. This effort requires significant resources and the Laboratory has continued to meet the ever-increasing requirements for data entry.

  The Site Office concurs with the overall rating of "Outstanding" for the Facilities Management performance measures based on achievement of the goals set for this area. The recommended change to the secondary indicators for FY 2004 is endorsed because it addresses the requirement of DOE O 430.1B, "Real Property Asset Management," for inclusion of the Asset Condition Index in performance measures. Challenges for FY 2004 include: (1) planning for continued facility maintenance expenditures to sustain a 2% Maintenance Investment Index and balancing capital renewal projects to achieve an overall 4% Facility Investment Index under existing funding constraints; (2) establishing an improved process for joint Laboratory and Site Office review and prioritization of General Plant Projects; and (3) providing additional technical, cost and schedule status information on selected projects.

- Property Management and Protection. The Site Office concurs in the overall rating of "Outstanding" which resulted from the satisfactory achievement of the FY 2003 performance goals and agrees that the measures are an accurate evaluation of the Laboratory's performance in property management and protection. It is noted that sensitive inventories continued at the improved rating of "Outstanding" while the Capital Property rating fell to "Good" compared to a rating of "Outstanding" achieved in FY 2001. While this is not a major concern at this time, appropriate emphasis should be applied in FY 2004 to address

this trend. DOE's ongoing operational awareness and SURA's objective performance results support the overall rating of "Outstanding." Facility walkthroughs and site observations further demonstrate that Jefferson Lab continues to strive toward an appropriate level of property accountability and protection. Property inventories conducted in FY 2003 indicated an accurate accountability rate exceeding 99% in all applicable categories with the exception of Capital Property. Personal property protection responsibilities are incorporated into the Lab-wide Security Awareness briefing, which is required for each employee, and home loan procedures were strengthened. Other noteworthy accomplishments include: (1) continued efforts to dispose of excess items and improve housekeeping, particularly in the warehouse areas and on the accelerator site, which lessened administrative burdens and associated costs; (2) increased emphasis on vehicle management under the Facilities Management Division; (3) demonstrated increase in property and export control awareness related to stepped-up security requirements; and (4) continued support of corporate citizenship by making donations to schools through the Computers for Learning program. The Laboratory should also be noted for continuing to provide professional certification and training opportunities to property personnel. The reporting of Annual Property Balanced Scorecard Self Assessment and other reports, while the results were positive, were generally not prepared in a timely manner.

Improvement continues in the area of the accelerator stores inventory. DOE recognizes and supports the incorporation of the Technical Stockroom function into the Administrative area. With the implementation of a "virtual stockroom" operation, the goal is to maintain the minimum required shelf inventory for items not easily obtained through internet or "just-in-time" procurements. The FY 2003 inventory results were 99.2 % which is considered "Outstanding." However, Stockroom performance should continue to be closely monitored as a normal course of business with a continuing emphasis on efficiencies of operations and best business practices. The Laboratory is encouraged to continue to emphasize reduction of equipment in storage, stockroom inventory and excess property, and to pursue "corporate" use of Laboratory stores and reutilization of property.

SC conducted an onsite P-Card/Property review during September 2003. While there were no major issues, a variety of concerns were noted which DOE understands are being considered for incorporation into property operations during FY 2004.

- Financial Management. The Site Office agrees with the overall rating of "Outstanding" resulting from the performance measures as an accurate evaluation of the Laboratory's FY 2003 financial management performance. Among other things, this assessment of the Laboratory's day-to-day financial management activities is based on the Cost Incurred Audit Report (FY 2000-2002), dated October 14, 2003, and the annual transaction-testing audit. However, there are some financial concerns related to the financial management activities of the SURA Corporate Office that are currently under review. The Laboratory continues to adhere to financial plan controls and has an effective system of closely monitoring expenditures against approved funding levels. The accuracy and timeliness of the 533M Cost Report was excellent and the FY 2004 budget submission was properly detailed and of high quality. The preparation of monthly cost trend charts provide increased visibility and awareness of cost performance, and the Site Office appreciates the Laboratory's efforts and cooperation on this and other financial matters. Jefferson Lab continues to maintain positive

working relationships with ORO and HQ. Furthermore, in October 2002, the Laboratory implemented a new organization structure creating a Chief Financial Officer position to strengthen the Laboratory's financial responsibilities. An area of continued focus this year should be preparations for integrating the Laboratory's financial systems into the DOE's financial management system.

- Procurement. The Site Office agrees with the overall rating of "Outstanding" resulting from the performance measures as an accurate evaluation of the Laboratory's FY 2003 performance in procurement. The Business Services Department continues to have a high level of customer satisfaction within the Laboratory and has continued to reduce their average procurement cycle time to 5.3 days. The growth of P-card and e-commerce is steady and appears to be well controlled. The procurement managers have an average of 20+ years of experience and are dedicated to supporting the mission of the Laboratory. The successful transition of staff services into the Business Services Department appears to have gone very smoothly with little to no interruption in the service level provided.

  Jefferson Lab continues to support the Department's socio-economic objectives and goals. Their dedicated efforts exceeded the FY 2003 contractually required socio-economic subcontracting goals and the Laboratory received the Corporate Cup from the Virginia Minority Supplier Development Council (VMSDC) for outstanding outreach activities with minority businesses. In addition, the Laboratory's Small Business Manager is the Vice Chair of the Tidewater Regional area of the VMSDC, which once again shows the Laboratory's strong commitment to the Department's small business program.

  Jefferson Laboratory's "Small/Disadvantaged Subcontractor of the Year" award continues to be greatly appreciated by the proud recipients and demonstrates, once again, the Laboratory's strong support of DOE's socio-economic objectives. The Laboratory continues to perform an outstanding job of balancing achievement of socio-economic goals while maintaining subcontracting competition and transitioning toward commercial procurement practices. Recent examples include: enhanced capabilities of various electronic online business systems and web-based tools; and development and implementation of performance-based contracts with award term incentives for critical Laboratory support service contracts (it is noteworthy that the Laboratory was recognized by DOE for this innovative approach as a Best Practices Award recipient).

- Human Resources Management. The Site Office concurs in the overall rating of "Outstanding" as an accurate evaluation of the Laboratory's performance in Human Resources and Services. This rating is further supported by an increase in the FY 2003 Administrative Peer Review numeric rating assessments. The Laboratory senior management continues to demonstrate a strong commitment to a compensation program that is competitive with other DOE laboratories and provides a complete range of employee benefits at a reasonable cost. The FY 2003 Salary Increase Fund proposal and required salary actions were noted as being reasonable, and well documented and presented. The Laboratory continues to improve its overall training program through the enhancement of web-based training. The Laboratory implements an effective Affirmative Action Program

and is expanding its interface with local Historically Black Colleges and Universities and other Minority Educational Institutions. All Diversity Commitments were met and a strong focus continues on identifying minority recruiting sources.

- Security. Even though Jefferson Lab was recently (October 2003) designated as a "Class C" facility that requires additional procedures in material control and accountability due to reportable quantities of two "other nuclear materials," for FY 2003 the Laboratory was designated as a "property protection" facility (which means that many of the security requirements do not apply to activities conducted at the Laboratory). Nevertheless, security comprises a broad area of responsibility that includes export control and personnel, physical and cyber security. All Jefferson Lab staff received the annual integrated security management awareness briefings. The Laboratory responded quickly to all DOE requests, often on short notice, for changes to the Laboratory's security posture as necessitated by changes in Homeland Security advisories and DOE HQ direction. A Foreign Visit and Assignments (FV&A) Program was established during the year in response to increased worldwide terrorism.

  The Site Office will continue to work with the Security Manager to determine appropriate actions to address any new policies and requirements while maintaining a level of security appropriate for the facility considering the national threat evaluation.

  In cyber security operations, there were two root-level compromises during FY 2003. A secondary accessible web server was compromised as a root kit was loaded. Appropriate immediate measures were taken as the site root and system administrator passwords were changed. The machine was removed from service, and the web pages provided by that machine were off line for seven workdays. There was no public manifestation of the compromise. Corrective actions have been implemented to eliminate future occurrences. Strong consideration should be taken to documenting procedures to be adhered to before connections to the network are established. In comparison to the number of potential attacks that existed, the raw score of two incidents is commendable.

  Overall, the cyber area is well managed. Cyber security is adequately protecting and is not interfering with the Laboratory's primary science mission. There is always the challenge to prioritize the management of future unknown cyber threats and the reduction of the risk of current technologies. Overall, the Laboratory personnel responsible for security are doing an admirable job. In summary, the "Excellent" rating achieved in the cyber category is an accurate evaluation of the Laboratory's FY 2003 performance.

  SURA/Jefferson Lab should continue to work closely with the Site Office, the Oak Ridge Office and Headquarters to ensure that all security program elements are addressed. During FY 2004, preparations should be begin in anticipation of indirect funding of the security program beginning in FY 2006; this is to be carried out in close coordination with the Site Office, the Oak Ridge Office and SC Headquarters.

In summary, the "Outstanding" rating achieved in this category is well supported by the Peer Review Panel's work, secondary performance measures, the Laboratory's self-assessment, DOE's ongoing operational awareness, and by other indicators of an effective business and

administrative structure. SURA/Jefferson Lab should continue working to close the remaining recommendations identified in the Administrative Peer Review Report and "improvements/ initiatives" identified in their self-assessment. Furthermore, careful attention should be given to managing a growing Laboratory with a lean administrative staff. Continued communication and coordination between the new administrative divisions (Admin, CFO, and CIO) and technical managers is essential.

On a separate matter, SURA needs to give additional leadership and management attention to corporate office services and business practices, with emphasis on: (1) strengthening the financial controls/systems of the SURA Corporate Office; and (2) developing a supportable method for determining Central Office Expenses.

5. Responsible Institutional Management (100 Points)

This performance category includes those essential elements of management which, when performed well, can contribute substantially to a healthy organization; specifically, Strategic Planning, Managerial Effectiveness and Organizational Culture. Specific criteria that further define these elements are included in Appendix B of the contract. Also as specified in Appendix B, SURA organizes an independent peer review committee composed of senior leaders and managers from other DOE laboratories, academia and industry to conduct an assessment of performance against these criteria biennially. In addition to the three primary elements defined above for this category, the review committee also examines data from the other performance categories defined in Appendix B in making its assessment and reviews the Laboratory's progress on each of the recommendations from the last Institutional Management Peer Review. The committee's most recent review was held on October 22-33, 2002, and delivered its report on November 7, 2002. Since the peer review is conducted every alternate year, a peer review was not conducted in FY 2003.

The FY 2002 Institutional Management Peer Review was the first since the change in Laboratory leadership and recent organizational changes made to better align the Laboratory for the future. The review was chaired by Dr. Charles Shank, Director, Lawrence Berkeley National Laboratory, and included Dr. John Armstrong, retired Vice President of IBM; Bruce Chrisman, Fermilab Associate Director for Administration and Chair of the FY 2002 Administrative Practices Peer Review; Dr. Charles Glashausser of Rutgers University; Dr. Walter Henning, Scientific Director of GSI Darmstadt; Dr. Donald Langenberg, Chancellor Emeritus of the University of Maryland system; Mr. Mike Telson, Director of National Laboratory Affairs for the University of California's Washington office; and Dr. Brad Tippens, SC Program Manager for Hadron Nuclear Physics and Chair of the FY 2002 Science and Technology Peer Review. The panel described Jefferson Lab as a "very impressive institution which is well managed and has a clear vision of its future" and rated performance as "Outstanding," with the Laboratory receiving 93 out of 100 available points. Jefferson Lab's outreach programs, particularly its education outreach efforts, were singled out as noteworthy and of tangible benefit. The math and science education programs were seen to be "without peer among the national laboratories" and "outstanding models worthy of national attention and emulation."

The committee awarded scores of "Outstanding" in each of the three subcategories and for the overall Institutional Management category. Following are highlights of the Laboratory's

performance in the three major subcategories for FY 2003. Conclusions from the October 22-23, 2002 peer review are supplemented by observations from the November 2003 SC On-site Review, feedback from the user community (both the scientific and the local user community) and from Site Office observations.

Strategic Planning

The October 2002 Peer Review Committee confirmed that Jefferson Lab is "producing scientific results of the highest quality, both technically and intellectually, exceeding expectations, and placed Jefferson Lab in the first rank worldwide...while the Laboratory is building on the technical core competency of superconducting radio frequency." The Laboratory demonstrates responsiveness to national priorities and user community requirements; the near and long term plans for the Laboratory's experimental and theoretical nuclear physics programs are well conceived and closely tied to specific DOE goals and strategies.

Both the Institutional Management Peer Review Committee and SC On-site Review participants were impressed with Jefferson Lab's strategic planning for the future. During FY 2003, the case for the proposed 12 GeV Upgrade was further strengthened, and the Upgrade is included in the Department's "Facilities for the Future of Science, A Twenty-Year Outlook", which was announced by the Secretary of Energy in November 2003. The Laboratory also proactively included the longer-term perspective (e.g., higher energies in the 30 GeV range, electron-ion collider) in the planning process. Both the Peer Review Committee and the SC On-site Review team were impressed with the Laboratory lattice QCD activity, and felt that this work had the potential to significantly impact the Department's effort in this area. Dr. Orbach counseled the Laboratory to work with the SC and other institutions involved in the National Lattice QCD Initiative to develop a single, common approach. The Laboratory's creation of a full time Chief Information Officer, who will focus the Lab's effort on the lattice QCD project, was a critical strategic decision.

The Laboratory has also made significant progress in its primary derivative mission activity, the Free Electron Laser (FEL). The Institutional Management Peer Review Committee stated: "The FEL has been an important ancillary activity to capitalize on and expand the SRF core competency. The progress toward completion of the 10 kW prototype and development of a 100 kW concept are excellent." However, both the Peer Review Committee and the Director of SC recommended an independent review of the long-term scientific FEL program at the Laboratory in the context of the overall national effort in the related sciences. During the FY 2003 SC On-site Review, the Director of SC reiterated the recommendation from FY 2002 that the Laboratory, the Site Office and the Nuclear Physics Program Office develop a "path forward" plan with stakeholder input for the Laboratory's involvement in FEL effort.

The Laboratory continues to be a "good neighbor" in the many diverse communities within which it operates. High levels of cooperation and partnership between the Laboratory and surrounding communities have yielded substantial benefits for all concerned. Examples of excellent local, regional, and state relations include management participation in the Hampton Roads Partnership, the Peninsula Alliance for Economic Development and the Virginia Research and Technology Advisory Commission. The continued success of the Applied Research Center has provided the opportunity for Laboratory scientists to interface with university and private

research scientists working on similar research and access to laboratories with several million dollars of university-funded equipment.

Jefferson Lab management has done an excellent job of involving the entire Laboratory staff in the planning process and informing staff of the vision for the future.

Management Effectiveness

A key measure of management effectiveness is efficient and effective use of resources to enhance scientific results at the Laboratory. The October 2002 Institutional Management Peer Review Committee in particular observed that "management is proactive in identifying problem areas and planning for the future," using the SNS "roll off" plan and the detailed staffing analysis as excellent examples. The Committee also was impressed with the support the Laboratory receives from the local community in both material and other terms. For instance, the City of Newport News made restoration of electrical power to the Laboratory second in priority only to restoration of power to the local hospital.

The reorganization of the Laboratory early in FY 2003, creating the positions of Chief Information Officer, Chief Financial Officer, and Project Management Director, has been effective in helping the Laboratory focus on critical areas that are receiving significant attention within the Department.

The Laboratory for many years has been a leader among DOE laboratories in being cost effective in both scientific and administrative aspects of operations. Although it is recognized that overhead can be measured in many ways, the Laboratory continues to have one of the lowest overhead rates in the DOE system. The Laboratory continues to subcontract most of its service activities (i.e., guard, cafeteria, shipping and receiving, maintenance, etc.) to the private sector, using the competitive process to realize significant cost savings and maintain minimal in-house staff. Jefferson Lab receives fire and rescue services from the local community, which provides both savings in the Laboratory's budget and the opportunity for the cognizant community organizations to be fully aware of the nature of the hazards at the site. The Laboratory also has excellent working relations with Dominion Virginia Power. As a result, after Hurricane Isabel did major damage in the Hampton Roads area in September 2003, Jefferson Lab received high priority for power restoration.

Jefferson Lab's self-assessment program, consisting of both internal assessments throughout the year and the annual Self Assessment of Contract Performance, is a significant element of the performance evaluation and management effectiveness process. In addition, the Laboratory is to be commended for the use of a joint DOE/SURA/Laboratory Contract Implementation Steering Committee that administers the Laboratory's evaluation process and resolves critical contractual issues.

Several accidents and near misses during FY 2002 raised the concern at the August 2002 SC Institutional Review that that there had been some lapse in implementation of the ISM principles and core functions, and Dr. Orbach requested monthly reports from the Laboratory Director. The Laboratory is to be commended for completing an in-house assessment of how well ISM principles are integrated and internalized, as well as follow-up actions taken as a result of the

assessment and Dr. Orbach's request, especially the personal involvement of the Laboratory Director.

Although facilities at Jefferson Lab are relatively new in comparison to many of the other SC laboratories, it is time to set the course for continued maintenance of facilities to provide effective workspace, assembly areas and operations support necessary to meet the Laboratory's programmatic goals. Jefferson Lab is to be commended for pursuing options such as energy savings projects and third-party financing to cost effectively provide much needed office space and upgrade aging and inefficient systems. Both the November 2003 SC On-site Review and the October 2002 Institutional Management Peer Review commended the Laboratory in this area. Dr. Orbach strongly supports Departmental initiatives to increase maintenance funds for infrastructure improvements. The Laboratory should continue to: (1) budget for repair and maintenance at a level that will sustain an appropriate maintenance index relative to the age of facilities at Jefferson Lab; (2) pursue cost effective options to replace inefficient storage and office space; and (3) pursue third-party or other alternative financing on those projects that are well suited for such funding options.

In addition to the Laboratory's core Nuclear Physics mission, there are significant activities that present both challenges and opportunities for retaining core technical expertise, specifically the FEL effort, the successful completion of the support work for the SNS and the 12 GeV Upgrade Project. The common thread among all of these issues is how they affect the retention of core expertise in superconducting radio frequency (SRF) work within the Laboratory and within the Department. After a two-year search, the Laboratory has selected a Chief Scientist, which should further improve the effectiveness of the management team and the interface with the users in the scientific community.

Organizational Culture

The October 2002 Institutional Management Peer Review Committee concluded that:

> "Jefferson Lab continues to embody a corporate culture that strongly supports its mission and that has contributed substantially to its many stellar achievements, scientific and otherwise. The Laboratory appears to be perceived by its staff at all levels as a great place to work, exciting and often fun. The employees are proud of their institution. Staff members appear to enjoy good personal and working relations with their colleagues, based on mutual respect. General morale is very high. A pervasive commitment to the mission of the Laboratory and to the scientific users whom it serves is evident."

Jefferson Lab is currently completing a reorganization that began about three years ago with Dr. Hermann Grunder's departure to take the Directorship of Argonne National Laboratory. The October 2002 Institutional Management Peer Review Committee concluded that the reorganization was well designed and implemented. During FY 2003, the second level of management change was initiated with the arrival of the Chief Financial Officer. Most of the new appointments have been made and appear to be of very high quality. A selection has been made for the last remaining senior position, Chief Scientist and Theory Group Leader, and the person is expected to report in early CY 2004.

Jefferson Lab has consistently enjoyed excellent relationships with local government authorities from the beginning, when the local government played an important role in attracting the Laboratory to Newport News. The Laboratory has done an outstanding job of maintaining and enhancing these relationships, as evidenced by the substantial continuing support received by the Laboratory from local authorities (e.g., in the funding and construction of new buildings on the site such as the Applied Research Center) and the continuing provision of fire and rescue and other municipal services. Laboratory officials serve in various community roles (e.g., in economic development organizations). The extensive volunteer work by all levels of Laboratory personnel in local, regional, state, and scientific community activities has been mentioned in previous reviews and deserves recognition as an excellent example of the Laboratory's organizational culture. Volunteers serve as Science Bowl judges, teach "hands-on" physics to elementary school classes, serve in community organizations, host "open house" events, and chair and serve on DOE technical review teams. City officials and regional representatives provide visible support and work with Laboratory management in the Laboratory's ongoing relationships with state and federal authorities.

The Laboratory's programs in math and science education received special commendation at both the November 2003 SC On-site Review and the October 2002 Institutional Management Peer Review. The state of math and science education in U.S. schools is behind most developed countries and in some circles is considered a crisis situation. With modest contributions from the Laboratory's operating budget and heavily supported by volunteer labor, the Laboratory has applied the scientific talent of the Laboratory to improving math and science education in the local schools. The results to date are impressive. The Laboratory has presented quantifiable data to demonstrate that the outreach efforts to 5th and 6th grade classes in inner city schools are improving test scores in math and science to bring them closer to the state average. Dr. Orbach has referred to Jefferson Lab as a model in this area. Jefferson Lab is encouraged to continue this important emphasis in its public outreach activities.

Conclusion

Based on the results of the October 2002 Institutional Management Peer Review, the November 2003 SC On-Site Review, feedback from users and the Nuclear Physics Program Office, and direct observations, the Site Office agrees with the overall rating of "Outstanding" for the Responsible Institutional Management category.

Update on Focus Areas from the October 2002 Institutional Management Peer Review

The October 2002 Peer Review Committee suggested and Laboratory management stated that the primary challenges of Laboratory management include securing sufficient funding, beginning the 12 GeV project and building an accelerator R&D program that is beneficial to Jefferson Lab and the Office of Science as well as other accelerator-based research. Ensuring a stable funding profile for the FEL, developing a strong user base for its science and capitalizing on strong public outreach programs, including education, were also mentioned as focus areas. Laboratory management has begun a process to identify and prioritize specific areas of operation that would benefit from additional investment as funds become available. Jefferson Lab and its user community continue to work aggressively with the DOE and concerned stakeholders to support DOE approval of the 12 GeV Upgrade. The Laboratory and the Office of Science community

continue to develop expertise in SRF and advance accelerator systems such as energy recovered linacs and to apply that expertise to new and anticipated facilities for science. Jefferson Lab has made significant progress with the Office of the Navy and other funding sources in establishing a stable source of funding for FEL-related R&D.

Focus for FY 2004

Performance measures as they currently exist are appropriate. The Site Office commends Laboratory leadership for effective management of the Laboratory, a clear strategic plan, strong user satisfaction, and a corporate culture clearly identified with the Laboratory's mission. The Site Office agrees with the "Principal Areas of Emphasis for FY 2004" as outlined in the Laboratory's FY 2003 Self Assessment. It is also recommended the Laboratory continue to pursue infrastructure improvements that take advantage of the Department's initiative in this area, and to assure that Jefferson Lab is the "employer of choice" among the DOE laboratories.

6. Project Management (45 Points)

There were two performance indicators for this area in FY 2003. Their focus was on schedule performance for the Spallation Neutron Source (SNS) Project and CEBAF Center Addition, Phase 1 (CCA) Project. Although initiation of the CCA Project was delayed because of the FY 2003 continuing resolution, the milestone dates of the project plan were met and the full 10 points allocated to that indicator were earned. SNS performance in FY 2003 was determined by evaluating outcomes of 20 Jefferson Lab SNS project milestones. The Site Office agrees with the score in the self-assessment document based on the scoring criteria established for FY 2003 with the caution that cavity and cyromodule production issues identified in the later part of the year have caused concerns in this area.

The SNS Inter-laboratory Memorandum of Agreement (MOA) requires that SNS management assess, at least annually, the performance of the SNS partner laboratories consistent with the SNS performance measures contained within their respective management and operating contracts. The following is quoted directly from the SNS management evaluation of the technical and management performance of Jefferson Lab for SNS work performed during FY 2003 and includes areas discussed with the Laboratory Director for desired improvements during FY 2004:

> "Jefferson Lab is responsible for the superconducting cavities and cryomodules and cryogenics system. Progress continues to be very good especially in the cryogenic systems area, where most of the components are delivered and installed. In the cryomodule/cavity development, assembly and testing area, progress has been slower than expected this year as a result of a variety of technical issues Jefferson Lab has had to face over the course of the year. While all of the issues were resolved in a very professional way, lack of progress manifested itself in a large negative cost variance that the project needs to resolve. In spite of these problems, three medium beta cryomodules are delivered and installed, with all of them exceeding specifications on cavity gradient and/or Q value by at least 50%. This confirms the solid design of the superconducting cavity system and will allow quite a bit of flexibility during SNS operation. The development and test of Lorentz force mitigation applications was finished during the course of the year and all cavities are equipped with piezo tuning

devices that allow the power overhead to be reduced drastically once SNS is in operation."

"The team, under the leadership of Claus Rode, continues to work closely with Oak Ridge National Laboratory staff to pursue construction and testing activities to meet crucial project milestones. Efficient management of resources and infrastructure are key to successful delivery of cryomodules on schedule and within budget, especially in view of the Budget Authority limitations in FY 2004 and the negative variances that have accumulated so far. Jefferson Lab management has been very supportive whenever issues have arisen and the general support of the Laboratory has been very good. We also want to thank Jefferson Lab for their hospitality for the five SNS technicians working there."

"For FY 2004, it will continue to be important to have a dedicated Jefferson Lab staff, where particular attention is paid to maintaining the schedule within the current funding allocation."

As noted in the introduction to this section, cavity and cyromodule production have become a concern and will require significant management attention in FY 2004. The review conducted in October 2003, which included international experts on superconducting cavity production, provided valuable information to develop a cavity production improvement strategy. Continued Laboratory management attention to implementation and monitoring of process improvements is strongly encouraged.

A significant portion of Jefferson Laboratory SNS work during FY 2004 will be in-house assembly of cavities and cryomodules. As the Laboratory is working diligently to deliver these key components on schedule and within budget, it is also imperative to continue to place strong emphasis on maintaining a safe work environment.

Jefferson Lab is committed to the delivery of the SNS cryomodules in support of the SNS Project schedule. To that end, the SNS performance metric for FY 2004 will measure cyromodule completion milestones.

The Laboratory is commended for its outstanding support in preparation for the CCA Project Critical Decision 2, Approve Performance Baseline. The addition to the CEBAF Center is needed to provide adequate infrastructure to support the Laboratory's mission. It is ranked as the number one priority in the Laboratory's Strategic Facilities Plan.

Challenges in FY 2004 for the CCA Project will be to obtain Critical Decision 3, Approve Start of Construction, and to maintain technical, cost and schedule baselines and progress while maintaining a safe work environment. CCA Project metrics for FY 2004 will measure both cost and schedule performance.